

**Remarks/Arguments:**

The Final Office Action dated June 2, 2004 rejects claims 9-16, 21-30, 34, and 35 under 35 U.S.C. § 103(a) as obvious over Tsuchitani et al. (EP 0 666 099) in view of Remeika et al. (U.S. 4,001,371). The Office Action cites excerpts of Tsuchitani et al. and Remeika et al. that disclose space velocity and its relationship to catalyst reactivity as suggesting to one of ordinary skill in the art to select an appropriate volume for the lean NO<sub>x</sub> catalyst system relative to the oxidation catalyst system. The Office Action also states that one of ordinary skill in the art would have considered the volume ratio a result effective variable. Moreover, the Office Action states that Tsuchitani et al. and Remeika et al. disclose the general conditions of the claims and when general conditions are disclosed, discovering optimal ranges involves only routine skill in the art (citing *In re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955)).

**I. Interview Summary**

The applicant appreciates the opportunity given their counsel, Christopher R. Lewis and Christian M. Bauer, to discuss the subject matter of the claimed invention in a personal interview with Examiner Leung on September 9, 2004 (see Interview Summary Record). The applicant makes the substance of the interview of record, in compliance with 37 C.F.R. §§ 1.2 & 1.133(b) and M.P.E.P. § 713.04, as follows.

The applicant's counsel presented arguments that the art of record does not teach or suggest a volume relationship of the lean NO<sub>x</sub> catalyst system to the oxidation catalyst system as claimed in the present invention. The Examiner stated that such an argument was not presented in writing with the last response and that such an argument could not be considered at this time. The applicant now presents the argument in writing for the Examiner to consider.

Also discussed during the interview was the prior art of Tsuchitani, Remeika et al., and Chen et al. Applicant's representatives argued that Tsuchitani is directed to removing NO<sub>x</sub> from gas in an oxidizing atmosphere with a NO<sub>x</sub> trap having an oxidizing component, an absorbing component, and an auxiliary component (page 8, lines 41-44; page 4 lines 1 and 2). Tsuchitani injects a regenerating agent into the NO<sub>x</sub> absorber portion of the NO<sub>x</sub> trap such that the absorber portion, the BaO, can be regenerated. In contrast, regenerant is injected into the presently claimed system to regenerate the platinum catalysts.

Chen et al. was discussed in view of the volume ratio relationship between the two catalyst systems. In the Office Action of February 7, 2003, the Examiner presented Chen et al. in combination with other art as rendering obvious the volume relationship. Chen et al. is silent regarding any specific value of a ratio that compares two catalytic systems and does not recognize the volume ratio as a result effective variable. The Examiner indicated that she would keep Chen et al. in mind when reviewing the applicant's supplemental response.

## **II. Grounds for Patentability**

The applicant presents written supplemental reasons for allowance as discussed during the Examiner Interview of September 9, 2004. Specifically, the applicant submits that the art of record does not teach or suggest a volume relationship of the lean NO<sub>x</sub> catalyst system to the oxidation catalyst system as claimed in the present invention.

### **A. The combination of Tsuchitani et al. and Remeika et al. fails to teach each and every limitation of independent claims 9 and 34.**

Independent claims 9 and 34 recite, "the volume of the lean NO<sub>x</sub> catalyst system is 300% or greater than that of the oxidation catalyst system." Tsuchitani et al. at page 9, lines 45-54, discloses positioning the oxidation catalyst or TWC either upstream or downstream of the catalyst/absorber. There is no disclosure regarding the volume of the TWC or oxidation catalyst in relation to the volume of the catalyst/absorber. Similarly, Remeika et al. is also silent regarding a volume relationship between a lean NO<sub>x</sub> catalyst system and an oxidation catalyst system. Remeika et al. discloses in Fig. 14 a two catalyst system, but is silent as to the relationship of the volume between these two systems.

Because the combination of the prior art references fails to teach each and every limitation of the invention, the Office Action supplements the rejection with additional reasons to modify the references.

### **B. Tsushitani et al. and Remeika et al. fail to establish a volume ratio between a lean NO<sub>x</sub> catalyst and an oxidation catalyst is a result effective variable.**

To support the rejection, the Office Action cites excerpts of Tsuchitani et al. and Remeika et al. that disclose space velocity and its relationship to catalyst reactivity as suggesting to one of ordinary skill in the art to select an appropriate volume for the lean NO<sub>x</sub> catalyst system relative to the oxidation catalyst system. The Office Action also states that one of ordinary skill

in the art would have considered the volume ratio a result effective variable. Moreover, the Office Action states that Tsuchitani et al. and Remeika et al. disclose the general conditions of the claims and when general conditions are disclosed, discovering optimal workable ranges involves only routine skill in the art (citing *In re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955)). The applicant respectfully disagrees and requests the Examiner's reconsideration.

The applicant reminds the Examiner of the discussion during a telephone interview of February 17, 2004 regarding the limitations found in the independent claims, namely, that "the volume of the lean NO<sub>x</sub> catalyst system is 300% or greater than that of the volume of the oxidation catalyst system." The applicant initially amended the claims to recite a "150%" volume relationship. The Examiner, however, corrected the applicant. Thus, as reported in the Interview Summary in applicant's response of March 10, 2004:

The Examiner indicated, however, it is improper to compare the oxidation catalyst of note (5) with the other comparative examples. The proper analysis is to compare the oxidation catalyst to the lean-NO<sub>x</sub> catalyst within note (5). This comparison would result in "at least a 300%" volume difference between the NO<sub>x</sub> catalyst and oxidation catalyst. The Examiner further supported this assertion by bearing in mind the limitations of claim 9 reciting a NO<sub>x</sub> and an oxidation catalyst.

Following the Examiner's instructive comparison, the applicant fails to understand how space velocity can make obvious comparing the volumes of two systems working together, that is, the oxidation catalyst system volume and the lean NO<sub>x</sub> catalyst system volume. As the applicant understands the comparison as suggested by the Examiner, the volume of the lean NO<sub>x</sub> catalyst was compared to the volume of the oxidation catalyst. Space velocity was not discussed as a factor in determining the volume ratio relationship. The applicant therefore fails to understand how one skilled in the art would be motivated by a disclosure of space velocity to render obvious a claim limitation reciting volume relationships *between two catalyst systems*.

The applicant also reminds the Examiner of the February 7, 2003 rejection citing Chen et al. as teaching that it would be a matter of design choice on the basis of suitability for an intended purpose to configure a two-catalyst system such that one catalyst is a specific volume to the second catalyst. The examiner states that absent unexpected results, the changes in size of the catalysts would involve only ordinary skill in the art. The Office Action also states that the prior art references disclose the general conditions of the independent claims and when general conditions are disclosed, discovering optimal workable ranges involves only routine skill

in the art (citing *In re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955)). The applicant submits that neither Remeika et al. Tsuchitani et al., nor Chen et al. consider the volume relationship between a lean NOx catalyst system and an oxidation catalyst system to be a result effective variable, design choice, or within one skilled in the art, a necessary prerequisite in making such a rejection based on (citing *In re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955)).

1. The volume ratio not recognized as a result effective variable

As stated in the M.P.E.P. § 2144.05, a particular parameter must first be recognized as a result-effective variable, *i.e.*, a variable which achieves a recognized result, before the determination of the optimum or workable ranges of the variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618 (CCPA 1977). Regarding the Office Action statement that one skilled in the art would consider the volume ratio a result effective variable, the M.P.E.P. § 2144.03 states, "it would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known. For example, . . . knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art." *In re Ahlert*, 424 F.2d 1088, 1091 (CCPA 1970).

The applicant submits that in view of the above, the prior art does not recognize the volume relationship between the catalyst systems as a result effective variable. Neither Tsuchitani et al. nor Remeika et al. recognize the volume ratio relationship between the lean NOx catalyst system and the oxidation catalyst system as variable that achieves a recognized result, let alone recognize a lean NOx catalyst system has a volume which is 300% or greater than that of the oxidation catalyst system volume as recited in independent claims 9 and 34.

Moreover, the applicant submits that it is not appropriate for the Examiner to state that one of ordinary skill in the art would consider the volume relationship of the lean NOx catalyst system and the oxidation catalyst system to be a result-effective variable because such is not well known and not capable of instant and unquestionable demonstration as being well-known. The M.P.E.P. § 2144.03 states, "it would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known. For example...

knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art." *In re Ahlert*, 424 F.2d 1088, 1091 (CCPA 1970).

2. The volume ratio is not a design choice known to one skilled in the art

A rejection of claims as an "obvious design choice" is precluded where the claimed structure and the function it performs are different from the prior art. *In re Chu*, 36 USPQ2d 1089 (Fed. Cir. 1995) (citing *In re Gal*, 980 F.2d 717, 25 USPQ2d 1076 (Fed. Cir. 1992) and reversing PTO's rejection of improvement as "merely an obvious design choice").


Chen et al. is directed to controlling volatile organic compounds (VOC's) and halogenated organic emissions by treating a gas stream comprising at least one non-halogenated carbonaceous compound and optionally at least one halogenated organic compound by contacting the gas with a first and second catalytic zone (Abstract). The applicant submits that the function of Chen et al. is different from the presently claimed invention. The applicant submits that it is not a matter of design choice for one skilled in the art when reading Chen et al. to modify the volume relationship of a lean NOx catalyst system to be 300% or greater than that of the volume of the oxidation catalyst system.

### III. Conclusion

The applicant submits that in view of the above, the prior art does not recognize the volume relationship between the catalyst systems as a result effective variable or as a design choice. Moreover, the applicant submits that it is not appropriate for the Examiner to state that one of ordinary skill in the art would consider the volume relationship a result-effective variable because such is not well known and not capable of instant and unquestionable demonstration as being well-known.

If the Examiner has any question regarding the arguments set forth above, she is invited to contact the applicant's undersigned representatives in order to expedite prosecution of this application.

Respectfully submitted,

  
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